Non invasive sensing technologies for cultural heritage management and fruition

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The relevance of the information produced by science and technology for the knowledge of the cultural heritage depends on the quality of the feedback and, consequently, on the "cultural" distance between scientists and end-users.

In particular, the solution to this problem mainly resides in the capability of end-users' capability to assess and transform the knowledge produced by diagnostics with regard to: information on both cultural objects and sites (decay patterns, vulnerability, presence of buried archaeological remains); decision making (management plan, conservation project, and excavation plan).

From our experience in the field of the cultural heritage and namely the conservation, of monuments, there is a significant gap of information between technologists (geophysicists/physicists/engineers) and end-users (conservators/historians/architects).

This cultural gap is due to the difficulty to interpret "indirect data" produced by non invasive diagnostics (i.e. radargrams/thermal images/seismic tomography etc..) in order to provide information useful to improve the historical knowledge (e.g. the chronology of the different phases of a building), to characterise the state of conservation (e.g. detection of cracks in the masonry) and to monitor in time cultural heritage artifacts and sites.

The possible answer to this difficulty is in the set-up of a knowledge chain regarding the following steps:
- Integrated application of novel and robust data processing methods;
- Augmented reality as a tool for making easier the interpretation of non invasive
- investigations for the analysis of decay pathologies of masonry and architectural surfaces;
- The comparison between direct data (carrots, visual inspection) and results from non-invasive tests, including geophysics, aims to improve the interpretation and the rendering of the monuments and even of the archaeological landscapes;
- The use of specimens or test beds for the detection of archaeological features and monitoring of monuments and sites.

In this way, we will be able to improve the appreciation of diagnostics and remote sensing technologies by the end-users.

At the conference, we will show and discuss several study cases depicting the deployment of this knowledge chain in realistic conditions regarding the CH management.

References

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